

Impact of Work Environment on Employee Productivity in Shipyard Manufacturing Company

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Abstract. This study aims to determine the impact of working environment on employees' productivity. This study took place in shipyard manufacturing company. Samples in this study of 315 respondents used quantitative approach with questionnaires method by using simple random sampling technique. The analysis technique applied multiple linear regression and the statistic test. The result indicates that either physical or non-physical working environment have positively and significantly impact with a contribution of 63.4% on employees' productivity.

Keywords: work environment, productivity

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Introduction

Much research has been done to test the working environment relation to employee productivity. Most empirical research on the work environment in general only focus on one variable is the physical work environment and ignore the variable work environment nonphysical which actually have a very important role to employee productivity.

Research on working environments with such diverse backgrounds has generally proven that the work environment has an effect on employee productivity (Taiwo, 2010; Akintayo, 2012; Leblebici, 2012; Indrajaya & Adnyani, 2012; Chandrasekar, 2011; Lestari & Sriathi, 2013; Naqvi *et al.*, 2013), but some studies have failed to prove that the work environment can increase productivity (Kurniawan, 2013; Arianto, 2013; Rini, 2007).

Research that examines the direct relationship between work environment and employee productivity has not been able to provide clarity about how non-physical work environment can have an impact on employee productivity. Although some researchers have conducted research on the work environment in various industry sectors, but the research is still very limited, especially in Indonesia itself, many studies are conducted only based on case study methods, so the population sampled is not enough representative.

In addition to the limitations of previous research, the phenomenon of business in Indonesia, especially the city of Batam is the reason for further research because Batam is one of the major industrial centers in Indonesia. One of the industries that had become a *prima donna* in Batam is shipbuilding industry. Based on Batam Tribunnews report, shipyard and electronic fabrication processing industry becomes the biggest contributor in boosting Riau's economic growth in 2012, and will still be excellent in 2013. But in 2014 the shipyard industry in Batam began to dim and decline production.

The external factors of shipbuilding industry weakness due to some government policies that are less supportive, one of which is the determination of Minimum Wage City. In addition, the decline in shipyard production in Batam is allegedly due to the shifting of ship orders, customers prefer to book ships in companies located in China. For some shipyards in Indonesia there are still reworking process, the emergence of excessive relative goods, and ship building time is relatively long enough (Suwarsono, 2010).

Seeing this condition is required efforts to improve the quality and productivity of labor to meet the main criteria to be able to compete with other companies. Increased productivity especially the total factors both at the macro level, industry sector level, company level and individual level greatly determine the competitiveness of the company's products. Increased productivity at the individual level among productivity increases in other factors occupies a very important position.

The social outlook on employment in Batam still lacks a vision of labor productivity. Seen that social relationships are less harmonious, creating a situation that is not conducive both between workers and with superiors, all this of course will hamper the level of labor productivity, especially in Batam. Whatever policy is applied, if it can minimize the inhibiting factors, then high productivity can of course be realized (Masyuri, 1999). Therefore, it is important for companies to provide a conducive working environment to minimize the occurrence of problems caused by these factors so that employee productivity can be improved.

Literature Review

Motivation Theory

Motivation required by employees because it can create a high morale so that the resulting productivity to be maximal. This research is supported by several motivational theories based on human needs and satisfaction, one of which is Maslow's hierarchy of needs theory (Malayu, 2010).

Maslow's theory explains that each individual has five basic needs that are arranged hierarchically. The five components of these needs are components that are within the environment of an organization. Maslow's theory explains that these five components are the basic human needs to be fulfilled. These needs are the basic motives of a person willing to work. Employees can work with enthusiasm and full of productivity when their needs are met (Malayu, 2010).

The basis of Maslow's theory is that humans are desirable social beings, tend to want more and continue until the end of life. If a need has been satisfied, then the need is not a motivational tool, because the human needs are stratified (Malayu, 2010).

Working Environment

The work environment means everything that is part of the employee's involvement with the work itself, such as relationships with colleagues and superiors, organizational culture, space for self-development, and so on (Poh, 2013). Broadly speaking the working environment is divided into two types of physical and nonphysical work environment (Sedarmayanti, 2011).

The physical work environment is all physical circumstances around the workplace affecting employees directly or indirectly. These physical factors include the temperature of the air in the workplace, the area of work space, noise, density and distress. While the non-physical work environment is more something that is not visible but can be felt. This non-physical factor relates to a good working relationship with a superior or relationship with fellow co-workers and subordinates (Sedarmayanti, 2011).

Prawirosentono (2002) explained that there are benefits of creating a good working environment such as minimizing the possibility of work accidents, optimizing the use of effective and efficient equipment and raw materials, creating comfortable and productive working conditions and directing the participation of all parties to create a healthy and healthy working climate.

Work Productivity

Work productivity is closely related to the work of a person. According to philosophical view, work productivity can be interpreted as a mental attitude that is always trying to improve the quality of life. While in the economic view, productivity is a comparison between the results achieved with the inputs used, where the results must have added value and better processing techniques (Malayu, 2010).

According Simanjuntak (1985) there are two factors that can affect employee work productivity that is related to the quality and physical ability of employees and the supporting facilities provided. Supporting facilities include work environment and employee welfare.

According to Puji (2013) the influence of the work environment on employee productivity is also considered important because every employee or member of other organizations spend almost a third of time in the work environment.

Research Methods

The type of data used in this study is primary data collected through questionnaires with a sample of 315 respondents. Based on data from the Ministry of Industry of the Republic of Indonesia there are 11 shipyard companies registered in Batam (Soembodo, 2004). The sample is obtained by using simple random sampling technique by taking the sample member of the population done randomly without considering the strata in the population.

Test validity is done by looking at the probability calculation $\text{Sig}(p) < 0.05$ or the value of r arithmetic $> r_{\text{table}}$. Then it can be concluded data declared valid or valid. From result of validity test which have been done, all physical work environment variable (X1), nonphysical work environment (X2) and productivity (Y) are all valid, with r table value equal to 0.1107 with significance level 5%.

The reliability test in this study shows that all physical work environment variables (X1), non-physical work environment (X2) and productivity (Y) are considered reliable because Cronbach's Alpha > 0.6 .

Results and Discussion

Descriptive Analysis

Based on the results of questionnaires distributed it is known that male employees are more dominant than women. From the data processing, it is known that employees of male gender are 247 respondents (78.40%) while female employees are 68 respondents (21.60%).

Based on the results of the study, it was found that the employees aged 18-25 were 70 respondents (22%), employees aged 26-35 were 204 respondents (65%), employees aged 36-45 were 29 respondents (9%) and employees 46-55 amounted to 12 respondents (4%). It can be concluded that the largest respondents aged 26-35 years as many as 204 respondents (65%) and the smallest respondents aged 46-55 years as many as 12 respondents (4%).

Based on the results of the study can be concluded that respondents who have high school education level or equal to the highest respondent with the number of respondents as much as 259 people (82%). While the smallest respondents are respondents who have D3 level of education as many as 19 people (6%). The difference is the employee who has

bachelor education level that is as many as 37 people (12%).

Based on the results of the study, employees who work less than a year amounted to 110 people (35%), employees with 1-3 years working period amounted to 156 people (49%), and employees with 4-8 years working period of 24 people (8%) and employees with a working period of more than 8 years amounted to 25 people (8%). It can be concluded that the largest respondents have 1-3 years working period as many as 156 respondents (49%) and the smallest respondents have a working period of > 8 years as many as 25 respondents (13%).

Classic assumption test

Table 1
Normality Test

		Standardized Residual
N		315
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.99681020
	Absolute	.067
Most Extreme Differences	Positive	.067
	Negative	-.066
Kolmogorov-Smirnov Z		1.186
Asymp. Sig. (2-tailed)		.120

a. Test distribution is Normal.

b. Calculated from data.

Based on Table 1 it can be concluded that the data has a normal distribution because the value Kolmogorov-Smirnov has a significance level of 0.120 is more than the probability value (0.05).

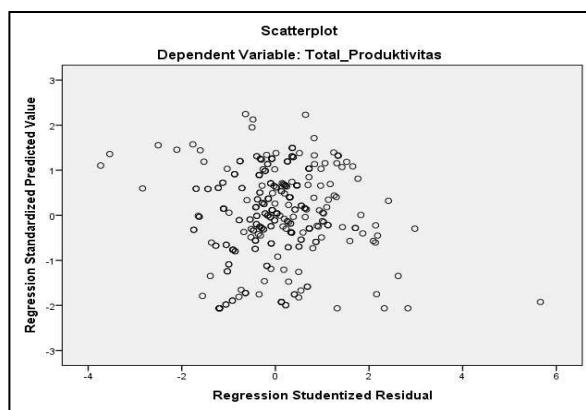


Fig. 1 Heteroscedasticity Test

A model is said to have symptoms of heteroscedasticity if there are variants of the model variables that are not the same. While a model is said to have no symptoms of heteroskedastisitas if the data

spread is not in the form of patterns. Based on Figure 1, it can be said that there is no heteroskedastisitas due to the different points or scatterplot that is above and below the number 0 on the Y axis.

Based on Table 2 it can be seen that the tolerance for each physical and nonphysical work environment variables is 0.374 while the Variance Inflation Factor (VIF) is 2.674. The criteria of multicollinearity testing show that all tolerance values are greater than the specified defaults of 0.10. While the VIF value also shows below the number 10. Then it can be concluded that all variables have met the tolerance and VIF requirements, which means that the independent variable to the dependent variable does not occur multicollinearity.

Table 2
Multicollinearity Test

Variables	Collinearity Statistics	
	Tolerance	VIF
Physical Work Environment	0.374	2.674
Non Physical Work Environment	0.374	2.674

Multiple Linear Regression Test

Table 3
Multiple Linear Regression Test

Variables	Coefficients ^a		t	Sig.
	Unstandardized Coefficients B	Standardized Coefficients Beta		
(Constant)	11.928	1.212	9.844	0.000
Physic	0.447	0.051	0.494	8.847 0.000
Non Physic	0.184	0.030	0.348	6.226 0.000
R	= 0.798			
R ²	= 0.636			
Adjusted R ²	= 0.634			
F count	= 272.991			
Sig. F count	= 0.000			

The first hypothesis proposed in this study states that the physical work environment has a positive relationship to employee productivity in the shipyard company in Batam.

Based on Table 3 can be seen that the physical work environment variables obtained t arithmetic of 8.847 is greater than t_{table} (1.9676) obtained from the level of significance $df = 312$. Test results also showed that the level of significance (0.000) is smaller than p value (0.05). Thus it can be concluded this regression equation model is significant which means that the hypothesis that the physical work environment has a positive effect on employee productivity is accepted.

The second hypothesis proposed in this study states that the non-physical work environment has a positive relationship to employee productivity in the shipyard company in Batam.

Based on Table 3 can be seen that the non-physical work environment variables obtained t count equal to 6.226 larger than t_{table} (1.9676) obtained from the level of significance $df = 312$. Test results also showed that the level of significance (0,000) is smaller than p value (0.05). Thus it can be concluded that this regression equation model is significant which means that the hypothesis stating the non-physical work environment has a positive effect on employee productivity is accepted.

Based on Table 3 it is known that the value of F arithmetic (272.991) is greater than F table (3.0247) obtained from significance level df_1 (3-1 = 2) and df_2 (315-3 = 312). Test results also show that the significance level of F arithmetic (0.000) is smaller than the critical value ($\alpha = 0.05$). Thus it can be concluded that there is a significant influence simultaneously from the variables of physical work environment and non physical work environment to employee productivity in shipyard industry in Batam.

The result of the data also shows that Adjusted R Square is 0.634 which means that 63.40% work productivity of shipyard industry employee is influenced by physical and non physical work environment, while the rest is influenced by other variables outside the model.

Based on the calculation of Standardized Coefficients Beta analysis in Table 3, it is known that the physical work environment variables have a beta coefficient value of 0.494 while the non-physical work environment variable is 0.348. Between the two independent variables, the physical work environment has the largest value of Standardized Coefficients Beta that is 0.494 so it can be said that the physical work environment has a dominant effect on employee productivity in the shipyard industry in Batam.

Conclusion

Based on the results of data analysis, hypothesis testing and descriptive findings on the work environment on employee productivity at shipyard manufacturing company in Batam, the following conclusions are obtained: Simultaneously there is a positive and significant influence between physical work environment variables (X1) and the

environment non-physical work (X2) on employee work productivity (Y) in shipyard industry in Batam.

Partially can be seen that the variables of physical and nonphysical work environment each have a positive and significant effect on employee work productivity in shipyard industry in Batam. Physical work environment variable (X1) is the dominant variable affecting employee work productivity in shipyard industry in Batam.

Based on the results of this study, the researcher suggests some things as follows: The next research is expected to add other variables or indicators that have not been discussed in this study. The results showed that productivity is not 100% influenced by the work environment, this means there is still a possibility of other criteria that have an effect on employee productivity.

Subsequent research is suggested to expand the sample by using the employee population in other companies that are not similar to the population sample in this study.

References

- Akintayo, D. (2012). Working Environment, Workers' Morale and Perceived Productivity in Industrial Organizations in Nigeria. *Education Research Journal*, 2(3), 87-93.
- Arianto, D. A. N. (2013). Pengaruh Kedisiplinan, Lingkungan Kerja dan Budaya Kerja Terhadap Kinerja Pengajar. *Jurnal Economia*, 9(2), 191-200.
- Chandrasekar, K. (2011). Workplace Environment and its Impact on Organizational Performance in Public Sector Organizations. *International Journal of Enterprises*, 1(1), 65-69.
- <http://batam.tribunnews.com/2012/12/28/tahun-2013-industri-shipyard-di-batam-diprediksi-masih-primadona>.
- <http://batamkota.bps.go.id/publikasi/detail/157?title=PDRB-Kota-Batam-Menurut-Lapangan-Usaha-Tahun-2014>.
- <http://www.kememperin.go.id/direktori-perusahaan>.
- Indrajaya, I. G. A. A., & Adnyani, I. G. A. D. (2012). Pengaruh Budaya Organisasi, Komunikasi dan Lingkungan Kerja terhadap Produktivitas Kerja Karyawan CV Hitakara Denpasar. *Jurnal Ilmu Ekonomi dan Sosial*, 2(4).
- Kurniawan, D. A. (2013). Pengaruh Lingkungan Kerja dan Upah Terhadap Kinerja Karyawan di PG Krebet Baru Malang. *Jurnal Ilmu Ekonomi dan Sosial*.
- Leblebici, D. (2012). Impact of Workplace Quality on Employee's Productivity: Case Study of a Bank in Turkey. *Journal of Business, Economic & Finance*, 1(1), 38-49.
- Lestari, P. A., & Sriathi, A. A. A. (2013). Pengaruh Pelatihan Kerja, Lingkungan Kerja Fisik serta Motivasi terhadap

- Produktivitas Kerja Pegawai pada PT Taspen (Persero) Kantor Cabang Denpasar. *Journal Ekonomi dan Sosial*.
- Malayu, H. (2010). *Organisasi dan Motivasi*. Jakarta: PT Bumi Aksara.
- Masyuri. (1999). Produktivitas Tenaga Kerja Sektor Aneka Industri: Perspektif Sosial. *Jurnal Studi Indonesia*, 9(1).
- Naqvi, S. M. H., Khan, M. A., Kant, A., & Khan, S. N. (2013). Job Stress and Employees' Productivity: Case of Azad Kashmir Public Health Sector. *Interdisciplinary Journal of Contemporary Research in Business*, 5(3), 525-542.
- Poh, M. (2013). *5 Characteristics of a Positive Work Environment*. [Online]. Available: <http://www.hongkiat.com/blog/positive-working-environment/>. [Accessed 15 04 2015].
- Prawirosentono, S. (2002). *Filosofi Baru Tentang Manajemen Mutu Terpadu Abad 21 Studi Kasus dan Analisis*. Jakarta: PT Bumi Aksara.
- Puji, M. S. (2013). *Dampak Buruk Tingkat Turn-Over Karyawan yang Tinggi*. [Online]. Available: <http://www.bestlife.co.id/lifestyle/the.good.life/dampak.buruk.tingkat.turnover.karyawan.yang.tinggi/004/001/251>. Accessed 15 04 2015].
- Rini, S. I. (2007). Pengaruh Lingkungan Kerja dan Tingkat Penghasilan terhadap Produktivitas Kerja Karyawan pada Industri Rokok Sinar Tunggal Jaya Malang. *Jurnal Ekonomi dan Sosial*.
- Sedarmayanti. (2011). *Tata Kerja dan Produktivitas Kerja*. Bandung: CV Mandar Maju.
- Simanjuntak, P. (1985). *Produktivitas dan Tenaga Kerja Indonesia*. Jakarta: FEUI.
- Soembodo, D. P. (2004). *Competitive Advantage Creating and Sustaining Superior Performance*. Available: <http://www.simonsays.com>. [Accessed 05 05 2015].
- Suwasono, B. (2010). Strategi Produktivitas Tenaga Kerja dan Daya Saing. *Jurnal Manajemen Bisnis*, 3(2), 203-222.
- Taiwo, A. S. (2010). The Influence of Work Environment on Workers Productivity: A Case of Selected Oil and Gas Industry in Lagos, Nigeria. *Journal of Business Management*, 4(3), 299-307.